REMARKS/ARGUMENTS

In the Office Action mailed on January 21, 2009, the Examiner rejected to Claims 1-8 of this application under 35 U.S.C. 102(b) as anticipated by Inoue (USPN 4,511,595).

Applicant appreciates the time and consideration provided by the Examiner in reviewing this application.

Applicant amended the pending claims to clarify the subject matter of the invention. In making these revisions care has been taken that no new matter is introduced and the amended claims are fully supported by the specification as originally filed in the present application.

Applicant respectfully traverses the rejection at least for the following reasons:

1. Described in the Inoue patent (*'595*) is a method of chemically depositing a metal from a solution onto a substrate, according to which:

the substrate 3 made of silica (column 8, line 9) with a specially pre-treated surface is placed to the bottom of a worktank 2, is secured in position by a clamp 8. The worktank 2 is filled with a solution containing salts of the metal such that a layer of the solution between an end of guide member 122 (fig. 9) and the substrate has a thickness in the range of from 0.5 mm to 5 mm (column 7, lines 13-15). This solution should be permanently cooled to a temperature of 5°C (column 8, line 31) and should be forced to flow above the substrate at a velocity of from 5 m/sec to 100 m/sec (column 2, lines 11-14).

As indicated in the *'595* specification, the process of metal deposition from the solution onto the substrate takes place spontaneously (column 4, lines 60-65). However, the duration of the process is high in this case and a 'self-deposition' of the metal is performed over the whole substrate area. In order to reduce the duration of deposition process and to provide for the metal deposition from the solution *at specified areas* of the substrate, the solution layer above these areas should be heated to a temperature of from 45°C to 60°C (*'595,* column 5, lines 8-12) by means of a heat source, for example, a xenon lamp or a laser beam (*'595,* column 13, lines 24-27, column 13, lines 41-43). When the solution layer above the substrate is heated with a laser beam, the laser beam is moved over the substrate surface by means of,

for example, a mirror 111 (*'595,* Fig. 5) or a carriage (*'595,* Fig. 9, ref. numbers 125, 126). In particular, in deposition of nickel from the solution, a rate of scanning (moving) the beam is 30 mm/min (column 7, line 10).

In order to provide a robust deposition of the metal from the solution onto the substrate, the substrate surface should be thoroughly pre-treated, as was indicated above, namely, should be washed in alkali and acid (*'595,* column 8, lines 10-14) followed by applying a sensitizing agent and an activating agent comprising, e.g., tin and palladium salts (*'595,* column 8, lines 15-20) to form nuclei for chemical deposition of the metal from the solution.

Thus, the deposition of the metal from the solution in the Inoue patent *'595* is performed onto local areas of the *pre-treated substrate* coated with the respective agents, which substrate, *being made of silica*, is impermeable for this solution. Moreover, a laser beam or any other scanning heat source interacts with the thickness of the solution above the specified areas of the substrate, but *not with the substrate itself*, while allowing the solution to be heated to a temperature at which the intensive deposition of the metal onto the specified areas of the substrate occurs from the solution. (Note: controlling the time of irradiation – column 5, lines 45-56 – is different from exposure to identical laser pulses).

It is perfectly clear from the above-mentioned consideration that in the Inoue patent:

- the solution cannot impregnate the silica substrate which is impermeable for it;

- the laser beam does not interact with the substrate and only heats up the pre-cooled solution to a sufficiently low temperature.

At the laser radiation output power capable of heating the solution layer up to a temperature of only 60°C, it is impossible to say about any penetration of the beam into the body of the silica substrate and whether it is capable of any channel formation therein, especially because the laser beam must not destroy the sensitizing and activating layer applied onto the substrate surface which is, according to the Inoue concept, absolutely necessary for effective metal deposition thereon.

Also, due to the very low temperature at the substrate surface, it is possible to deposit layers of different metals on its surface in sequence, but it is impossible to form an alloy from these metals at this temperature since considerably higher temperatures are required for forming metal alloys, such as in the order of a thousand or more Celsius degrees.

2. In contrast, in the present invention the use is made of a sheet material capable of *absorbing a solution*, for example, a sheet of a printed paper.

As indicated in the present applicarion, it is capable of protecting special products printed on the sheet material against counterfeit, for example bank notes (money). For doing this, it is required to create a protective image within the sheet material from a combination of metalized points being formed from a metal salt imbedded into channels within the body of this material.

Therefore, a liquid phase of the solution is necessary only to deliver the salts of the respective metals into the body of the sheet material, i.e. to impregnate a part of the sheet material in the area where a protective image is to be created.

Upon completion of the above operation, the sheet material is dried and is ready for its exposure to very short pulses of laser radiation, in particular having duration of about 10 ns (See Page 6, line 3).

It is well known to persons skilled in the art that the pulse power of a laser with an average power not exceeding 0.5 watt is more than one thousand watts in such a short pulse. That is why the interaction of a very short pulse of laser radiation with the metal salt in the solution within the sheet body causes the reduction of the metal from this salt and its deposition into a channel formed by the laser beam in the sheet material. The protective image is created from a combination of the resulting metallic points embedded into the sheet material.

As to the apparatus of claim 8, the reservoir is used only to contain the metal salt solution. However, the solution is applied to the sheet material not by placing the sheet in the solution as in *'595,* but by transferring the solution to the surface of the sheet (Page 5, lines 13-16). Also, the laser pulses are applied to the surface of the sheet (Page 5, lines 23-32), and not to the salt solution above the surface as in *'595.* Thus, the apparatus of the present invention is believed to be novel and patentable in view of the cited prior art.

Thus, it is clear from the above that the method and apparatus for producing a metalized image on a sheet material according to the present invention cannot be carried out by a method proposed by Inoue's *'595.* Inoue neither discloses nor suggests impregnating a sheet material with a metal salt solution in specified areas, using laser radiation with short high-power pulses to form channels within the body of a sheet material and creating metallic points

in the channels. To the contrary, according to Inoue's method, it is impossible to use therein laser radiation with short high-power pulses.

Inoue clearly teaches away from such important features of the present application as the impregnation of a sheet material with the solution, the formation of channels in the sheet material at the sites of metal deposition, the exposure of the solution to short pulses of laser radiation, and the formation of alloys from the deposited metals.

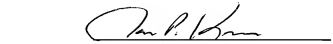
Since the independent claims 1 and 8 as presently amended are believed to be allowable over the cited prior art, the dependent claims are also allowable.

In view of the above, Applicant respectfully requests reconsideration of Examiner's decision and allowance of the application as presently amended.

The Commissioner is hereby authorized to charge any additional fees which may be required in this application under 37 C.F.R. §§1.16-1.17 during its entire pendency, or credit anyoverpayment, to Deposit Account No. 06-1135. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 06-1135.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY



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